EVOLUTION OF MAN'S DIET*

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FEW of us as we partake of our daily bread ponder on the many changes that have taken place in our food habits since pre-historic days. Meals are taken for granted, and we concern ourselves chiefly in having the wherewithal to procure them, and the appetite to enjoy them. Nevertheless there is a long story to be told, not only regarding the evolution of man's food habits, but about the alterations effected in his digestive organs consequent upon the changes which have taken place in his diet. I purpose therefore, in the present paper to trace briefly the dietary habits of man from the time when, because of an existence largely arboreal, his food was necessarily of the vegetable type and more or less difficult to procure, up to the present when it may be truly said of his diet that it is so refined that he lives to eat.

Three great changes in man's feeding habits may be recognized; and in our description we will speak of a pre-cooking period, a cooking period, and a food culture period.

The pre-cooking period includes the period when our ancestors many æons ago were struggling for an existence and lived chiefly on a herbivorous diet consisting of all forms of seeds, nuts, berries, leaves, plant shoots and roots, honey, barks, and to a lesser extent on animal food easily pounced upon, such as snails, insects of all kinds, birds' eggs and so forth. Because of this voluminous vegetable intake great strain was put upon his masticatory apparatus, and in consequence the jaws were heavy and the teeth strong. There was also a greater need for a large and very muscular intestinal tract. As man became more upright and made greater use of his prehensile power and rapidly developing intellect his diet became more carnivorous, and as the ages rolled on he became skilled in the fashioning of weapons for hunting, fishing and trapping, and his table, if we can use that term, became graced with the more desirable products of forest and stream. With increasing skill in hunting, he became encouraged to move into strange regions. It is probable that the desire for new hunting grounds had more to do with his wanderings than had the changes of climate. Coincident with this gradual change to a more carnivorous diet alterations gradually took place in his intestinal tract; the cæcum became less roomy and the appendix at one time probably a useful part of the large gut became more and more atrophied.

Prior to the discovery of fire and the invention of cooking, man probably prepared his vegetable food by sun drying, grinding and even by burying it for short periods, but with the discovery of the value of fire, he greatly added to his dietary in being able to cook many vegetable substances otherwise unpalatable or injurious. At the first, the methods of cooking food must have been crude and simple, as holding it over embers or even placing it upon the fire and thus charring it. The underground oven which evolved from these simpler methods was suggested by the earlier customs of building a fire over food. Then followed the practice of cooking by stone baking and stone steaming in which layers of vegetable substances were alternated with layers of hot stones. The art of boiling water came later, as containers were difficult to procure, and receptacles such as shells of fish, large eggs, and plaited rushes served poorly to withstand the action of fire. According to Sutherland,[1] even to-day the Australian aborigines and South African bushmen do not utilize boiling water for cooking, though they make use of the above-mentioned primitive methods of baking and roasting food. A novel way of boiling water by dropping hot stones into watertight reed vessels is still employed by the Esquimaux, and by the natives in remote parts of Finland and northern Europe.

This cooking stage antedated the third period of food culture and probably occupied a time

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of two to three hundred thousand years up to possibly forty thousand years ago. Sutherland[1] states that there are existing to-day races or tribes in scattered parts of the world whose food habits and methods belong to this second stage, who neither cultivate the vegetable kingdom nor breed animals for food. They have no metals or pottery, and are ignorant of all but the most rudimentary arts.

The food culture epoch began, it is thought, probably about 30,000 years ago when man began to store food supplies and commence protecting and storing fruit, seeds and roots. To me, it is interesting to consider a prehistoric day when some cave man more venturesome than his fellows first drove wild goats, pigs or sheep into a cavern and thus secured them for future slaughter and how his slowly evolving mentality devised this newer method to obtain delectable morsels of animal food. However the origin, animal husbandry followed upon the cultivation of vegetable life, both of which were the important precursors of our present highly refined dietary and civilization. In the earlier portion of this period agriculture must have been very casual, and carried on in a very desultory fashion. The soil must have been with difficulty broken and prepared. Patches were sown here and there at random, and were deserted as soon as harvested. Man still remained a hunter and a fisher, and thus supplied himself with animal food which was supplemented by the products of an uncultivated vegetable kingdom, some of which he cooked and some of which he ate raw.

Some time about 15,000 years ago neolithic man began to roam less and settle more in tribes in localities where soil was arable and more readily tilled. Coincident came the domestication of animals and progress was gradually made towards civilization. It is probable that fruits were first cultivated, then roots, and finally cereals; the latter requiring more careful cultivation. Up to quite recently our forefathers broke their land with difficulty and grew barely enough for their own needs and for purposes of trading. Until the beginning of the last century it is probable that no more than 5 per cent of the daily food intake was of cereal character. With the advent of the modern steel faced plough, sod breaking became relatively simple, and with the later modern inventions for assisting farming enormous crops were grown in all temperate regions. Finally, the invention of the means of bolting flour for the purpose of prolonging the keeping qualities of wheat, insured its commercial success by enabling it to be transported world-over. To-day, the diet of the average white man is estimated to consist of about 35 per cent cereals, largely of a refined nature. As with cereal so with sugar. Prehistoric man ate little sugar, and then only in its pure form, such as wild fruits and honey. With the cultivation of the sweeter fruits this intake became moderately increased, but since the commercial production of sugar from the beetroot and sugar cane its consumption has multiplied enormously.

Man is now making an experiment with a dietary of a kind which no people in history ever tried. That nutritional disorders, which may result from this experiment, especially in the more highly civilized countries, are greatly on the increase cannot be disputed. One explanation of this may lie in the theory put forth, that a depletion of the calcium and phosphorous reserve of the body is brought about by the excessive formation of acid products from a diet too high in starches and sugars, and this is worthy of serious consideration. The choice of food is most important for growth, fertility and longevity, and certainly the refined cereal products, muscle meats, sugar and potatoes which make up our diet have been shown by McCollum to be insufficient to support animals satisfactorily. Man's adaptability to food is most remarkable, as one learns by studying the history of his diet, but until quite recently the laws of evolution appear not to have been greatly interfered with, and changes have been scattered through æons. Whether in these days of the exploitation of cold storage food, devitalized cereals, condensed milk, canned meats, fruits and soups, man can rise to the occasion and adapt himself to such a dietary only the future can tell.

REFERENCES

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